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ABSTRACT

A review of the literature on the use of the workplace as a learning site in vocational education identified alternative models used to combine workplace learning with school-based programs and identified a framework and criteria for evaluating programs using the workplace as part of their instructional process. Although there is some evidence that the use of cooperative education and internships is increasing in postsecondary schools and colleges, the basis for increased use is probably more a function of perceptions than empirical data. One of the assumptions is that work experience is a powerful motivator. Few studies have explored the contribution of experientially based work programs to the social development, educational advancement, or psychological maturity of participants. Little research has specifically examined the link between participation in the many unique forms of work-based experiential learning and later success in the labor market. The methodology most often used to study experiential learning is self-report of participants. Little attention has been focused on postsecondary schools' use of experiential learning. There is a need to examine more closely what interns, faculty, and field supervisors do to ensure that students learn and that host organizations are appropriately served. (5 pages of references) (CML)

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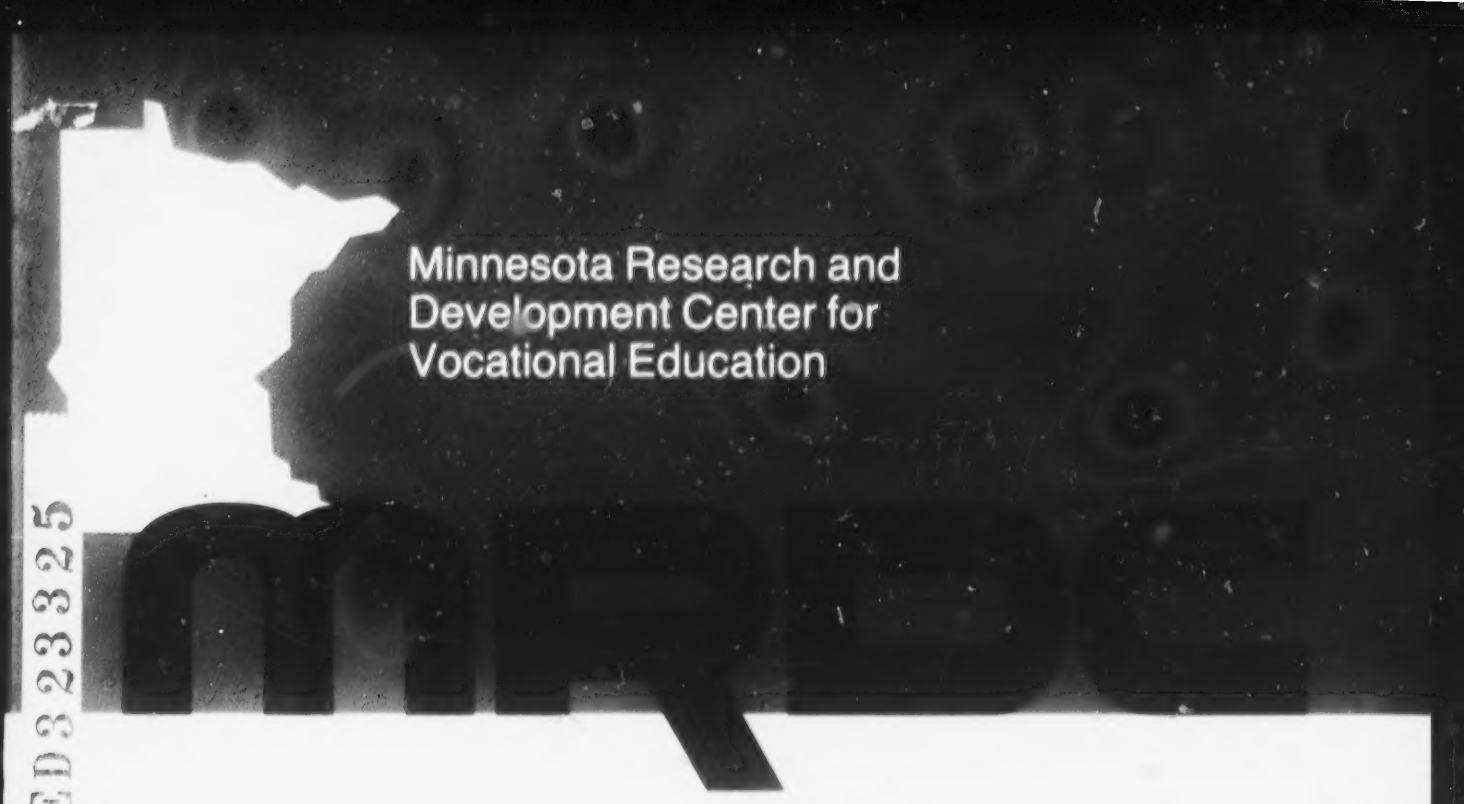

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Alternative Strategies for Providing Work Experience

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June 1990

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CHAPTER 1

LEARNING ABOUT WORK THROUGH EXPERIENCE

Are schools adequately preparing students for the reality of work? Peter Drucker (1989) argued that they are not. He asserted that schools scorn the real world of work when failing to recognize that most Americans will or do work within a sizeable organization. Not preparing students for this reality leaves them foundering as employees and lacking the skills to effectively work as members of a team within an organization. To counteract this breakdown, Drucker believed that schools should address the elementary skills needed by people to be effective in an organization, including the capacity to "shape and direct one's own work, contribution to the workplace, and career by making an organization a tool for the realization of one's aspirations and values" (p. 19).

This will require that educational systems in the United States do two things that have traditionally been assumed to be mutually exclusive: (a) school systems should make education more relevant to the world of work, and (b) they should work toward the achievement of the good life for students (Gregory Anrig, cited in Feldman, 1986). Anrig further suggested that there is no choice about either goal; an elemental new reality has been thrust upon America's educators.

Purpose of the Study

The purpose of this study was to review the literature on the use of the workplace as a learning site in vocational education. This review was undertaken to accomplish two specific objectives:

1. Identify the alternative models used to combine workplace learning with school-based programs.
2. Identify a framework and criteria for evaluating programs utilizing the workplace as part of their instructional programs.

Importance of the Study

It may be that most levels of educational systems are failing to recognize the real needs of their students in relation to the remainder of their lives. With the quickening pace of technological change, large and progressive corporations are increasingly seeking applicants with abilities to learn and change with the times, who have strong basic academic skills, a willingness to work hard, and a capacity to think. "A steady drumbeat of criticism from all quarters has stirred grave doubts that the schools can prepare qualitatively adequate human power to keep our economy competitive in an increasingly sophisticated world market" (William T. Grant Foundation [WTGF], 1988, p. 94).

The conventional educational reforms suggested today (e.g., increased teacher pay, student performance evaluation, teacher testing and re-certification, immense computer purchases, more rigorous core curriculum) are scarcely revolutionary in revolutionary times (Snyder, 1987). In fact, Snyder asserted, there is little empirical evidence that these measures will have any significant importance to public school performance. Piling additional science, language, and math classes upon poor grounding is not the answer, but rather compounds the problems of ineffective learning that may lead to student frustration and humiliation. Albert Shanker, president of the American Federation of Teachers, argued that recent reforms that added more academic coursework failed to help struggling students because, in effect, they raised the hurdle for kids who were unable to jump it in the first place. The ability to learn, and the manner in which a person learns, are unique to each individual. Understanding how a learner internalizes and integrates information has always been one of the major problems that faces education. But it seems clear that loading the curriculum with additional academic courses is not the answer to the problem; in fact, classes most often requested at the junior college level are remedial courses in science, math, and English (Shanker, 1988).

As Moore (1983) argued, educators should not succumb to the academic myth that systematic, rigorous, complex mental work occurs only in classrooms, or that practical experience is good only for practice and retention. Rather, educators should pay close attention to the kinds of mental operations students will be encouraged and expected to perform in the course of doing their work. Thinking in the real world may indeed supplement and reinforce school-based learning, but it can also do far more to develop valid and important learning in its own right.

In making a case for business involvement and support of education, the Committee for Economic Development issued the following statement:

> Human resources determine how the other resources of the nation will be developed and managed. Without a skilled, adaptable, and knowledgeable work force, neither industry nor government can work efficiently or productively. The schools are the central public institution for the development of human resources. Tomorrow's work force is in today's classrooms; the skills that these students develop and the attitudes toward work that they acquire will help determine the performance of our business and the course of our society in the twenty-first century. (Campbell, Cunningham, Nystrand, and Usdan, 1990, p. 33)

Education methods and future work demands should be linked more effectively. While the responsibility of schools is not solely to prepare students for work, an emphasis on cooperative work strategies, experiential learning, and instruction that requires thinking skills, rather than rote memorization, better prepares young people for the complex workplace they will soon confront. This led the William T. Grant Foundation to recommend that:

> The public and private sector give continuing attention to cooperative education, internship, apprenticeship, and other forms of hands-on, experiential learning. Cooperative education, with its emphasis on monitored work experience, usually for pay while the student is still enrolled in school, has a solid achievement record and merits far more attention than it has received. A somewhat similar, even less used approach is the internship, in which people still in school are exposed to careers and work on an unpaid, part-time, or short-term basis. Apprenticeship is a far more comprehensive but also substantially underused strategy in America, where until recently it tended to be union-directed . . . Thus, the Commission endorses a mixture of abstract and experiential learning opportunities, a combination of conceptual study with concrete applications and practical problem-solving. We are convinced that these experienced-based educational mechanisms offer some of the most exciting opportunities available anywhere in America for sound learning and healthy personal development. (WTGF, 1988, p. 94)

Because of this persuasive argument, experiential learning theory was used to provide a conceptual framework for the review.

Learning Through Experience

Currently, a subtle shift is occurring within the education community as it comes to realize that experiential learning is critical to the educational process. Drucker (1989) pointed out that the inclusion of internship programs, a form of experiential learning, will change the face of education both at the secondary and postsecondary levels. Thus, experiential learning will become the means to foster a better connection between education and learning, ultimately providing a better link between education and work. Dewey (1938) stated that experience is the process that links education, work, and personal development and the greatest challenge to education will be the need to cope with change and lifelong learning. These two concepts are very much a part of the present educational dialogue.

Learning takes place when (a) learners regard what they need to know as relevant to their lives; (b) they feel that their teachers (or any title applied to the function) are committed to their success; and (c) institutional environments allow for differences in learning methods and styles, and are in harmony with the diverse needs and interests of learners (WTGF, 1988). The William T. Grant Foundation research showed that effective learning is closely related to successful performance in the workplace, and therefore, to productivity and product quality, two aspects of our economy requiring urgent attention.

In a response to this need, Carnavale, Gainer, and Hooland (1988) argued for the "upskilling" of workers. Upskilled worker traits include a worker who can:

1. Learn how to learn--understands own learning style.
2. Listen well--clarifies understanding of work group members.
3. Solve problems--troubleshoots problems encountered by self or workgroup.

4. Think creatively--contributes innovative solutions adding to the competitive nature of the company.
5. Demonstrate self-esteem--provides experiences appropriate for self-development.
6. Self-motivate/set goals--becomes less "other" directed.
7. Demonstrate teamwork skills--exhibits interpersonal, negotiation, and leadership skills.

One means for developing these upskilled worker traits is experiential learning. Learning through firsthand, full-bodied realities is the essence of experiential learning. Immediate, concrete experiences serve to arouse observation, prompt reflection, and spur action (Kolb & Lewis, 1986). Learning occurs when an individual is actively involved with an experience and reflects on that experience. Experience is important as a reinforcer of learning. Observation and reflection on experience are means for transforming experience into learning. Therefore, the real consequences of individuals' actions provide the feedback which enhances the ability to connect what they have experienced to past experiences. During this process, individuals' brains search their memory for some connection. This is what John Dewey (1938) called connecting to the continuum. It covers the formation of attitudes (emotional and intellectual), and it covers our basic sensitivities and ways of meeting and responding to all the conditions which we meet in living. By encouraging reflection on the meaning of abstract concepts in the light of shared personal experiences, learners find examples and applications in their experience that illustrate concepts (Kolb & Lewis, 1986). From this point of view, the principle of continuity of experience means that every experience relies on that which has gone before and modifies in some way the quality of that which follows (Dewey, 1938).

The most crucial factors in learning are strength of motivation, appropriateness of learning resources to learning tasks, and the climate of learning environments (Association for Experiential Education, 1984). Thinking and learning, in Dewey's view (cited by Phillips & Soltis, 1985), evolved because they have a vital function--they enable humans to survive by escaping from danger, by foreseeing serious problems before they occur, by enabling foresight, planning, productive activity, and so forth. In other words, thinking and learning are practical capacities in the exercise of which we actively interact with our surroundings. According to Pataniczek and Johansen (1983), all worthwhile experiences, if they are to result in learning, should make this vital connection, thus connecting to the continuum. He also noted that few teachers have a clear working notion of learning.

This process is an outgrowth of the strategy used by human beings to interact with reality. Instead of contacting the world "as it truly is," people decode experiences based on their own unique reference points. Bacon (1983) called this process of decoding experiences a transderivational search. Searching for a connection is precisely what makes learning through experience so attractive. Bacon suggested that individuals can search three domains of experience: Physical, intellectual, and

emotional. Entwistle and Ramsden (1983) cited philosophers such as William James and Charles Pierce who emphasized the active, spontaneous, and pleasurable nature of learning--the emotional side of learning. Traditional didactic, lecture-oriented approaches to learning often connect with only the intellectual continuum, ignoring the physical and emotional. Lecturers tend to think that the context or environment of student learning is not of great importance. They attribute success or failure to the characteristics of students, not to their teaching. Active engagement in activities which satisfy needs, and involve physical or mental challenge, confrontation, or high levels of responsibility, are important for stimulating interest, analysis, and growth.

Experiential Learning

Experiential learning has its roots in the earliest thought on what it is "to know" (Leske & Zilbert, 1989). Aristotle first espoused the idea that knowledge comes from experience. This was in contrast to Plato's position that knowledge comes through the reasoning process, not through one's senses. While modern science has largely adopted the empirical view (Aristotle) for the definition of knowledge, the rational view (Plato) is dominant in the transmission of knowledge. Formal schooling is largely a rational process of mastering theories which often are seen as unrelated to the "real" world. Kolb (1983) postulated that learning is best facilitated in environments where there is dialectic tension and conflict between immediate, concrete experience and analytic detachment. Dewey (cited by Kolb, 1983) also believed that textbook problems most often were not real problems to students and that school learning should be an experientially active, not a passive, affair. He supported learning experiences in which learners are directly in touch with the realities being studied, rather than simply reading about, hearing about, or talking about these realities. When experiential learning techniques are used as contributors to the creation of a learning environment that maximizes learners' skills in learning from their own experience, the full potential for learning can be realized (Kolb & Lewis, 1986). With more possibilities to connect to the continuum, experiential education has distinct advantages.

Is all experience educational? Dewey (1938) stated that the belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative. Experience and education cannot be directly equated to each other, for experience alone is not learning. For some, experiences are mis-educative. Any experience is mis-educative that has the effect of arresting or distorting further growth. Only when experience can be expressed as new ideas, when the lessons of experience can be drawn, articulated, and acted upon, will development have taken place (Whitham & Erdynast, 1982).

Creating the educative environment requires an understanding that (a) environmental factors influence learning, (b) not everyone learns in the same way, and (c) learning is ultimately self-

directed, an individual matter, and occurs best when individuals are self-motivated (Association for Experiential Education, 1984). Dewey (1938) saw teachers as having a primary responsibility for shaping experiences which would fit learners and lead toward growth. This suggests two major responsibilities for educators. First, learners should be provided with appropriate experiences, and then teachers should facilitate the learners' reflections on those experiences (Joplin, 1981).

For vocational educators, it is not sufficient to merely place students in work situations and assume that learning will occur. A critical task, then, is the design of learning environments and strategies which (a) allow for differences in learning styles, (b) enhance the intrinsic interests of learners, and (c) provide opportunities for reflection. The need for structure in experiential learning programs is supported by Druian, Owens, and Owen (1986) who argued:

> Successful experiential education programs have clearly articulated purposes that are interpreted by program participants. It is reasonable to suppose that stated program purposes both reflect the needs of a group of learners and imply a certain content. In successful programs, the relationship of program purposes to educational need and program content are demonstrable. (p. 51)

Since development proceeds from stage to stage in an invariant sequence, according to Whitham and Erdynast (1982), experiential education programs can promote development only by carefully promoting "optimal matches" between their students and situations that challenge them at a level with which they can successfully struggle. Too small a challenge will not provide motivation to change and to learn. Too great a challenge may invoke self-protective responses such as regression, rebellion, or discouragement. If optimal matches are not found, and students are not able to actively grapple with experiences to which they are exposed, programs may only "train students to function in certain roles or to perform certain tasks, expose them to a wealth of new people, situations, and ideas, even provide them excitement and enjoyment, but they will not foster development" (Whitham & Erdynast, 1982, p. 8).

Compatible experiential learning models have been developed that outline the specific steps which direct learning based on experience. Kolb (1984) suggested a widely accepted model or cycle of experiential learning (see Figure 1).

The first component is concrete action in a specific situation and noting the effects of that action. The second component is reflective observation on that action to identify the particulars of the situation. The third is generalization about the relationship of the elements to the results of the action. The fourth component is systematic testing of the generalization for relationships with different conditions. Only when individuals complete the cycle does learning occur.

Argyris and Schon (1974) offered a similar model. They suggested that the experience checked against established concepts through reflection leads to formulation of integrated concepts based on

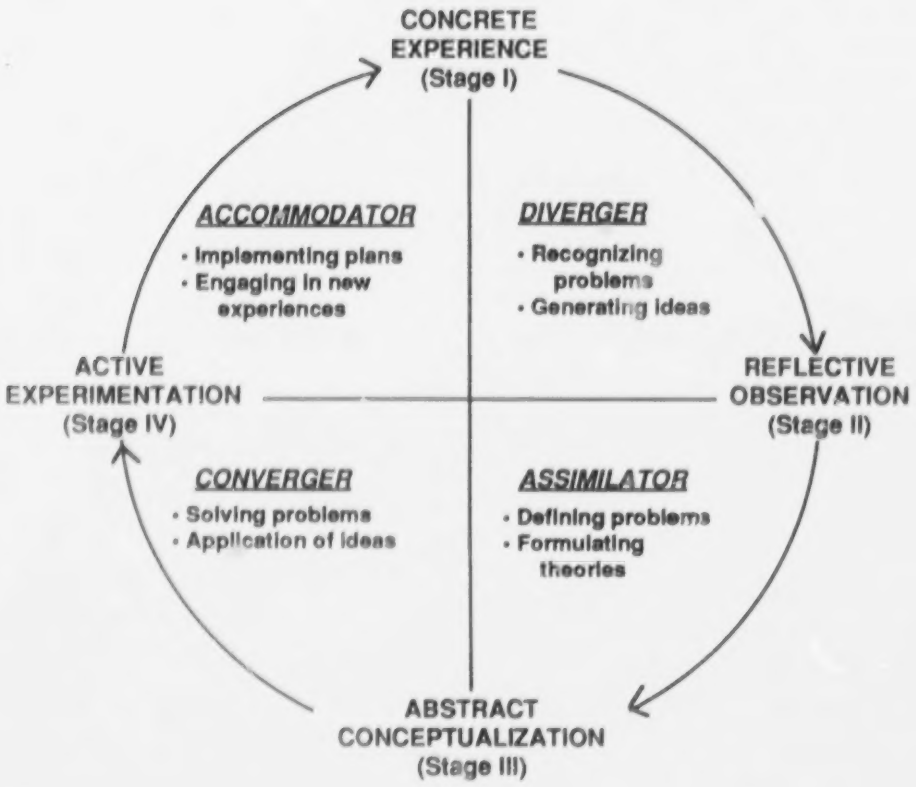

Figure 1. Kolb's learning model.

one's actual experience and knowledge of established theories, which in turn modifies one's actions. Ultimately, through this cycle of experimentation, students will develop their own explicit theories and, thereby, be able to go from specifics to generalization and to additional specifics. A model offered by Doherty, Mentkowski, and Conrad in 1978 (cited in Permaul, 1981) combined the two models to form a third experiential learning model (see Figure 2).

Regardless of the model used, the implications for monitoring and supporting activities are essentially the same. The activities should require students to complete in sequence the critical steps outlined in each model. Whatever the format, it is important that students are guided to complete the cycle regularly rather than just having an experience without some form of disciplined reflection and thought about it. Equally important is the development of a range of experiences for students that will allow them to move from carrying out assigned responsibilities to autonomous

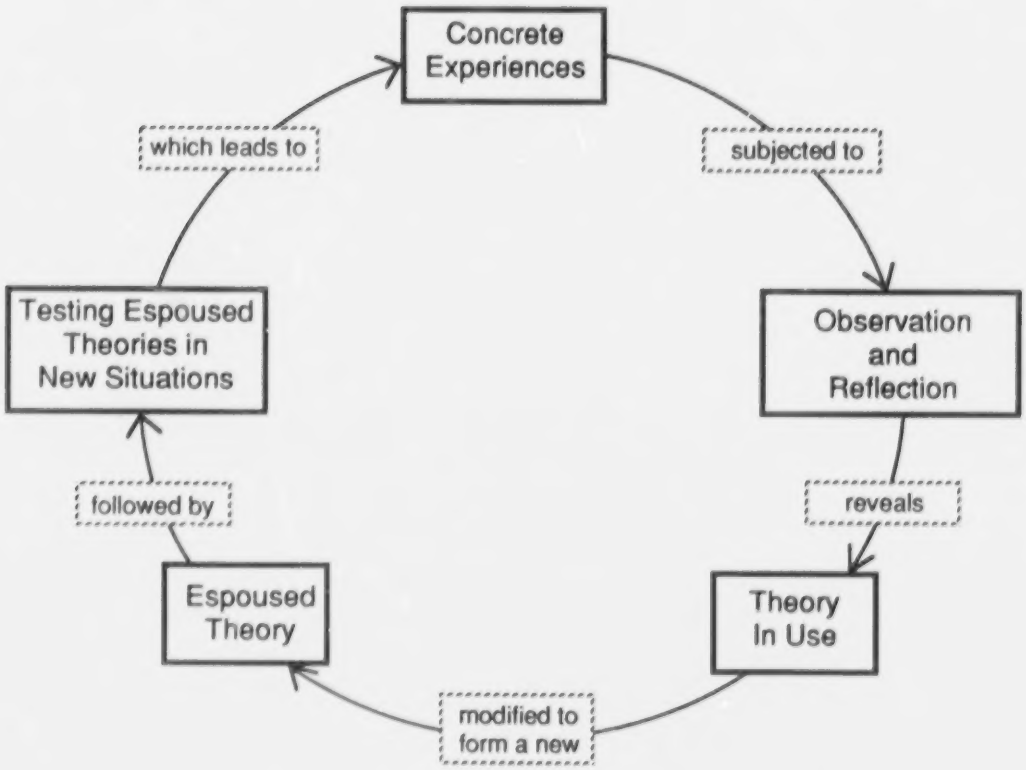

Figure 2. Experiential learning model.

responsibility-taking; from engaging in essentially self-oriented activities to taking on sustained responsibilities for the welfare of others (Whitham & Erdynast, 1982).

Assuming that an experience is appropriate for individuals' needs, the next vital step is to reflect on this experience. Reflection is the critical examination of an experience so as to understand its implications for a general conceptual model of the phenomena. Joplin (1981) described reflection as the process of examining an experience and transforming it into a learning experience. This concept of critical examination of experience through reflection is a focal point of much of the current work in experiential education. It is often during this process, referred to as an "action-reflection cycle," that individuals make a connection between their experience and their continuum (Dewey's, 1938, process of attitude formation). Dewey referred to the initial, immediate experience as the "primary" experience. He considered the reflective experience to be the "secondary" experience. Dewey stated that reflective experience takes the gross, macroscopic, and crude materials furnished by

primary experience and seeks to make it precise, microscopic, and refined. It is during this secondary experience that individuals link experiences to their continuum.

Boud, Keogh, and Walker (1985) suggested that this reflective process can be structured into an educational program. Reflecting on an experience (a key principle in experiential learning), and drawing a conclusion, can lead to modifying a future behavior. This change in behavior, Cell (1984) argued, is an outcome of significant experiential learning.

The process of reflection has also been called transfer of learning (Gass, 1985). Jerome Bruner (1960) believed three distinct types of transfers can occur. Specific transfer involves learning specific skills and knowledge and applying them *in similar settings.* Non-specific transfer occurs when common principles and attitudes are applied *in new learning situations;* generalizing what is being learned and applying it *in a new way* is critical. Metaphoric transfer of learning involves the learner transferring similar principles *to different settings;* generalizing and then applying the skill or knowledge *in a different context* is necessary.

As Bloom (cited in Moore, 1983) has demonstrated, learning can also occur at various levels or depths of understanding. Coleman (1976) described experiential learning as a four-step process. It begins with an individual observing the results of some form of action. The second step is understanding the effects of the action in a particular instance, so that if the exact same set of circumstances reappeared, one could anticipate what would follow from the action. The third step is understanding the general instance under which the particular instance falls. The process of generalizing may involve actions over a range of circumstances to gain experience beyond the particular instance, leading to the identification of a general principle. The last step is the application of the general principle in a new circumstance.

Similarly, Steinaker and Bell (1979) proposed a five-level experiential taxonomy. The first level is exposure to an experience. This is followed by participation, which involves the decision to become part of an experience physically. The third level is the identification of an idea by learners in emotional and intellectual contexts. The fourth level is internalization, which is when experiences begin to affect the lifestyles of the participants. Last is the level at which dissemination occurs when participants share with others what they have learned.

A later framework for experiential education proposed by Gass (1985) suggested a model that begins with an assessment of student needs relative to determination of the learning objectives based on this assessment. Tasks, experiences, and activities are then designed or specified to attain these goals. Ongoing reassessment and feedback are used to adapt programs for increased student learning and the potential of transfer to future situations. After the experiences, follow-up activities are designed to aid in retention and transfer.

These theories suggest a framework for constructing experiences such as internships, apprenticeships, mentorships, practicums, and other field-based experiences employed by vocational and technical programs. Without this framework as a basis, these activities become nothing more than a job. As Willard Wirtz, former United States Secretary of Labor (cited in WTGF, 1988), observed, "There are not two worlds--education and work--one for youth, the other for maturity. There is one world--life." Indeed, experiential learning (i.e., learning by hands-on participation, trying, making errors, and gradually narrowing the margin between failure and success) should be at the heart of our educational perspective. Instead, the invaluable educational laboratories offered by community institutions--youth organizations, civic groups, and the workplace--are often overlooked, underfunded, and under-utilized. Stanton (1983) suggested that structured work experiences (a) increase self-esteem and personal growth derived from successfully meeting new interpersonal and intellectual challenges, (b) promote acquisition of particular skills and knowledge, (c) expose students to various work roles and career choices, and (d) provide service to a particular community or group.

Learning About Work Through Experience

Typically, work-experience programs sponsored by educational institutions, such as technical colleges, involve an in-classroom component, a work component, and are jointly and cooperatively supervised by school personnel and worksite personnel (Pataniczek & Johansen, 1983). These programs typically include all experiences whereby students learn as participants in organizations, through actual work, observation, or projects. Students, employers, and school representatives usually enter into formal arrangements that spell out the nature of the relationships and various responsibilities required of each party.

However, one cannot assume that such programs automatically promote significant learning. While the potential for learning is great, it does not occur automatically. To ensure that actual learning occurs, Mulcahy (1984) urged educational planners to incorporate the basic philosophies of experiential education into their programs.

Macala (1986) expanded this argument by suggesting that such programs be designed to broaden intellectual, social, and political awareness through the experiencing of ideas and self in real-world settings. These programs should also provide opportunities for career exploration and the development of useful and marketable skills.

The key to ensuring that learning actually occurs is providing the structured reflective opportunities that many argue ought to be part of any work-experience program (Conrad & Hedin, 1981; Moore, 1983). Reflection during the work experience is also vital to individuals' success in an experiential learning situation. As instructive as it may be to know that experience should be

accompanied by reflection, it is not practically useful without precise information regarding how best to structure, guide, and encourage such reflection (Conrad & Hedin, 1981).

One strategy for guiding reflection is a "control" class that is conducted concurrently with the work experience to provide an opportunity for reflection. Students may attend this class weekly, bimonthly, or in another timeframe to discuss their work experience. The motivation generated by work-experience programs often transfers back to classrooms as students recognize the need for more extensive theoretical background. If properly guided, students infer and conclude certain truths from their experiences, often creating critical teachable moments.

A great amount of reflecting or "processing" can and should occur while students are at field-placement locations. Processing can be achieved through those activities in which students are monitored and receive feedback on their performances on tasks. This allows for reconstructing the problem and designing a new approach (Moore, 1983).

Conrad and Hedin (1981), in a national study evaluating field-based programs in secondary vocational settings, reviewed various program features and concluded that the presence of a formal (and at least weekly) seminar was the single strongest factor in explaining positive student change. The clearest and most significant conclusion of this study was that experiential programs are powerful educational vehicles for promoting personal and intellectual development and can do so more effectively than classroom instruction.

There are numerous ways to provide work-based learning for vocational students. In some countries (West Germany, Ireland, Australia) apprenticeships are still believed to be the most effective strategy of work-experience learning for students (Kennedy, Williamson, & Patterson, 1987). Although a variety of training strategies are available for work-experience learning in the United States, the most popular program for both academic and vocational students is cooperative education (Glover & Shelton, 1987; Hartley, 1983; Worthington, 1984).

However, which of these is the best mode of work-experience learning still remains unknown. Very few researchers have conducted comparison studies among the work-experience strategies in terms of their contribution to productivity, job performance, and vocational attitudes of students.

Also, the labelling of a program (internship, cooperative education, practicum) apparently has little impact on its structure, although program components tend to strongly influence the results of a given work-experience program. Because of this, Glover and Shelton (1987) argued that there is a need to derive relatively standard definitions so that all can speak essentially the same language and so that comparisons can be properly made.

The number of postsecondary educational programs that combine work and study has increased in recent years, in part because of the widespread belief that such programs benefit all participants (Mulcahy, 1984). The benefit to educators is that some concepts can best be learned outside of the

classroom where problems are real, solutions complex, and individualized challenges possible (Macala, 1986). In addition, Glover and Shelton (1987) observed that certain learners can be more effectively motivated through training conducted in workplace settings than through classroom learning alone. Also, state-of-the-art training is often more readily available at worksites than in educational institutions (Washburn & Galloway, 1987). Eventually, the benefit to employers is that, whether paid or unpaid, experience-based educational programs are a cost-effective way for companies to recruit and train future employees (Macala, 1986).

CHAPTER 2

STRUCTURING THE WORK-LEARNING EXPERIENCE

Experience-based programs need to have certain elements in place in order to maximize student learning. These key ingredients include (a) a learning plan with clearly stated learning objectives; (b) preplacement planning (Mulcahy, 1984); (c) clearly defined roles for instructor coordinators and supervisors in relationship to the process (Pataniczek & Johansen, 1983); (d) control classes or some means for reflection; and (e) a method of program evaluation (Conrad & Hedin, 1981).

The Learning Plan

A key structural variable that captures many of the preceding elements is a well-articulated work-learning plan, sometimes referred to as a learning agreement or a training plan (Wanat & Snell, 1980). The learning plan should enumerate learning objectives, methods of learning, activities/responsibilities, time required, provision for supervision, and method(s) of student evaluation. In addition, as a permanent record, the learning plan is useful for subsequent placement services and follow-up studies.

Mason, Furtado, and Husted (1989) contended that learning plans bring students face-to-face with the problem of developing vocational objectives and competencies necessary to achieve those objectives. In addition, learning plans allow employers to become more aware of student learners' occupational goals and encourage them to lead students toward an objective by providing adequate work activities and on-the-job instruction.

The initial stage of learning plan development is the determination of what is to be learned. Duley (1977) identified three basic ways to identify what is to be learned: (a) learning objectives, (b) learning activities and reporting procedures, and (c) students' broad educational and/or personal development goals or competencies. However, he also argued that this task is more difficult in experiential education than in didactic situations. As examples, the unplanned learning opportunities at a worksite may be more significant than those previously identified, or learning opportunities anticipated may not materialize. In addition, instructors have less control over experiential learning environments than more traditional classroom situations.

Developing Learning Objectives

Learning objectives should clearly state (a) the knowledge or skills expected to be demonstrated as the end products of the experience, (b) the conditions under which they will be demonstrated, and

(c) the level and stability of performance required (Duley, 1977). To properly incorporate the theories of experiential learning, student learners should be extensively involved in the formulation of objectives (Mulcahy, 1984). Students should identify broad educational and/or personal development goals or competencies, and be provided with a means of structured reflection on and reporting of the results of their efforts.

The work-experience program at Santa Rosa Junior College (1989) offered an example of student involvement in setting objectives. Students' written objectives, which were validated by employers, generally answered the following questions:

1. What are you planning to achieve?
2. Why are you going to achieve this?
3. How do you intend to accomplish this?
4. How will completion be measured?
5. When are you going to complete this objective?

Agreeing on a written outline of learning objectives is the next step. Students' and employers' expectations should be clearly written, agreed to, and related documents should be signed by all parties. Learning objectives should include (a) the specific objectives to be achieved, (b) how they will be accomplished, (c) a timeframe for completion, and (d) how each objective will be measured (Mulcahy, 1984). A statement of students' career objectives, including a brief description of the skills, attitudes, and knowledge necessary for work in the occupation, should be stated on learning plans, as well as a list of job activities that will contribute to students' progress toward those career objectives (Mason et al., 1989).

Identifying the skills, attitudes, and knowledge necessary for successful work experiences is a critical responsibility for site supervisors and coordinators. Moore (1983) classified these as logical-technical and pragmatic tasks, about which the following questions should be asked:

Logical-Technical Tasks

1. What physical or psychomotor skills do the tasks require (hitting a nail, typing a letter)?
2. What kinds of cognitive skills should the intern display to accomplish the task (memory, syllogistic reasoning, problem solving)?
3. What relational or affective skills do the tasks demand (looking professional, being patient, acting responsibly)?
4. How much space and time are required for the adequate performance of the tasks and how are they arranged (paced, sequenced, divided)?
5. What material objects, data, and people are utilized in the performance of the tasks?

Pragmatic Tasks

1. How central or essential are the tasks in the operation of the organization?
2. How do these tasks articulate functionally with other tasks, whether performed by the intern or by other workers?
3. How does the performance of the tasks affect the organization's relations with their external environment (market, competitors)?
4. What is presumed about the readiness of the persons performing the tasks? Do these people have to attain particular positions before being permitted to undertake the jobs?
5. Does performing the tasks qualify people technically or socially for other, more complex or prestigious tasks?

Methods of Learning

It is also essential that the most appropriate method of instruction be determined for each of the objectives set forth in learning plans. Learning activities and reporting procedures should ensure the acquisition of the learning expected by individuals. In a study by Harris (cited in Leske & Perisco, 1984), employers and coordinators agreed that classroom instruction related to students' work experiences, as well as training materials for the student to study in school, enhanced the quality of the work experience. Wanat and Snell (1980) stated that learning agreements assist teacher-coordinators in planning related instruction. Although they may be modified as a result of conferring with workstation supervisors to compensate for students' areas of weakness, these plans still identify the direction of students' overall learning experiences.

Activities and Responsibilities

Learning plans also delineate the activities and responsibilities of cooperating employers, student learners, and schools (as represented by supervising instructors) to ensure proper coordination of learning experiences. This documentation dispels doubts or misunderstandings that might undermine worksite learning programs.

Duley (1977) noted the following as critical concerns in monitoring experiential learning that need to be considered when developing learning plans:

1. Establish what to monitor--include the students' objectives, progress, and any problems encountered by students.
2. Determine how the monitoring is to be performed.
3. Establish a timeframe for the monitoring, outlining when visits, conferences, evaluation reports, etc., are to be done.
4. Assign persons who are responsible to do the monitoring, which may involve faculty, staff, field supervisors, or a combination of these personnel.

Mason et al. (1989) and Wanat and Snell (1980) identified minimum elements of responsibilities that should appear on a training agreement. They suggested that cooperating employers should (a) observe all state and federal laws and regulations relative to the employment of student learners; (b) provide on-the-job instruction in accordance with the student learners' training agreements; (c) assist with student evaluations; (d) recognize the shortcomings of trainees, while being positive in terms of possible solutions; and (e) expect trainees to abide by the same rules as everyone else. The responsibilities of student learners are to (a) conform to the rules and regulations of training sites, (b) refrain from changing their place of employment without the prior approval of teacher coordinators, (c) consult with teacher coordinators about any difficulties arising at training sites, and (d) abstain from work on any day that they fail to attend school. School personnel responsibilities include (a) correlating on-the-job learning experiences with in-school related instruction, (b) consulting with employers and training supervisors and rendering any needed assistance with training problems concerning student learners, (c) operating programs in conformity with United States Office of Education and State Department of Education regulations, (d) preparing and organizing progressive work program schedules to be performed by student learners on the job, and (e) assisting in the evaluation of the student learners.

Time Required

Estimates of the length of time students should be expected to devote to each phase of the learning plan should be determined. Tentative plans delineating a time-sequenced schedule of activities should also be agreed upon by all participants. Also, according to Mason et al. (1989), a specified number of working hours per week should be established for all students. For students working part-time, the suggested minimum is 15 hours and the maximum 25; total hours of employment and school attendance should not exceed 40 hours per week. In addition, the length of work experiences should be specified in learning agreements. There is little research evidence to support the merits of either part- or full-time employment as the preferred approach to maximize student learning.

Provisions for Supervision

Coordinators and training-site supervisors should agree upon supervision components--the monitoring and supporting of learning while students are in the field. Jenks and Murphy (1981) identified the following activities commonly used in work-experience programs:

1. Journals or theme papers that denote reflection activities
2. Progress reports
3. Control classes/seminars
4. Examinations

5. Supervisors' comments and evaluations
6. Individual conferences with students
7. Site visits and/or telephone contacts with field supervisors

According to Jenks and Murphy, site visitations were used too seldom to make supervision a truly cooperative arrangement between schools and worksites. Conditions that contribute to the lack of site visitations include the time required by coordinators, travel expenses, and, for some summer programs, coordinators who are not under contract. Nevertheless, site visits with accompanying student assessment are considered critical to the success of work-experience programs in that they provide students with essential feedback from both employers and coordinators. Leske and Persico (1984) maintained that without feedback on performance, it is impossible for students to make meaningful changes in their behavior.

Wanat and Snell (1980) described typical arrangements for site visits. The coordinator should prearrange visits with supervisors, and students should be observed once every two weeks for a period of approximately one-half hour (coordinators should stagger the days and hours of visits so that students can be observed in all facets of their work experiences). While at worksites, coordinators should seek input from worksite supervisors regarding (a) students' progress on their jobs, (b) students' willingness to cooperate with co-workers, (c) students' progress in meeting training outline schedules, (d) the related instruction as suggested by employers, and (e) students' and employers' understanding of the intent and objectives of the program.

Method of Student Evaluation

The evaluation process assists in determining the extent to which learning plans provided for detailed training based on students' career interests, abilities, and aptitudes. The evaluation should assess how well students are progressing toward goals established by students, coordinators, and site supervisors. Performance should also be measured to determine students' grades if they are receiving credit for their work experiences (Wanat & Snell, 1980).

Mason et al. (1989) identified several methods for measuring student achievement at training stations. Common forms of evaluation strategies include rating sheets of generic job skills, training plans, training profiles, discussions with training sponsors, observation of trainees during visitations, and impressions gained in control classes as the students use (or do not use) job knowledge in discussions and activities.

Students participating in work-experience programs are often more involved in evaluation and assessment processes than they are in more traditional classes. Those involved in field-based learning are asked to reflect on their experiences, to engage in self-assessments, and to utilize such reflections and self-assessments to establish additional learning goals. This step in the assessment process allows

students to evaluate their own personal progress and provide feedback to coordinators regarding the benefits of their experiences. According to Leske and Persico (1984), since students are providing their own analysis of their growth and development, it is much more likely that they will be open to suggestions from worksite supervisors and instructor coordinators concerning areas of strength and weakness.

Preplacement Planning

Preplacement planning is essential to designing learning experiences that are appropriate for individuals. From the onset, it is crucial that both companies and the students' sponsor understand and agree on time schedules, standards, compensation, orientation strategies, training activities, and evaluation methods.

It is also crucial that the nature and purpose of programs are communicated throughout participating organizations. Programs use a variety of formats for pre-field preparation, offering several alternatives to meet individual needs (Macala, 1986).

A critical step is the selection of training stations. Mason et al. (1989) offered criteria for selecting such sites:

1. Type of occupation--should allow experiences that utilize both skills and knowledge directly related to students' career goals.
2. Opportunities for rotation--should provide a wide variety of experiences beyond routine activities.
3. On-the-job supervision--should provide skilled supervisors interested and eager to assist.
4. Working conditions--should provide a safe and ethically sound environment with up-to-date facilities and equipment.
5. Hours/wages--should be appropriate for each student.

Having determined that sites are appropriate as educational laboratories for students, it is vital that managers and/or designated supervisors be further oriented to program objectives and processes. Training sponsors need to know the responsibilities of supervisors, as well as the importance of related classes to the development of students' learning experiences. Coordinators may provide orientation workshops for all training sponsors in addition to individual conferences that allow opportunities to discuss the problems and possibilities involved in work-experience programs. It may be relatively simple to convince firms to employ students, but it takes time and patience to negotiate good work-learning plans and to establish atmospheres conducive to their successful implementation (Macala, 1986).

Most work-experience programs offer general orientations to their participants shortly before they begin to work at their jobsites. General orientations for students normally involve information

about the nature of jobs, the kind of skills and knowledge needed to perform job duties, and the criteria by which performance will be judged (Moore, 1983).

Whitham and Stanton (1979), however, proposed a more extensive pre-preparation approach that would provide students with specified basic skills that would allow them to learn from, grow in, and shape their work experiences. Duley and Yelon (1978) suggested that observing and recording, reflecting, oral information gathering, and clarifying values are among the basic skills students need to make the most of their work experiences. Whitham and Stanton believed the experience of learning from one's actions is the most crucial of the basic skills. Students need to be provided with structures that require them to make responsible decisions, critically reflect on the outcomes of those decisions, act again, reflect, and so on.

Preplacement planning should occur after worksites have been identified to properly incorporate the needs of both students and sites during orientations. Most coordinators use a variety of strategies to find placements (e.g., previous placements, or collaboration files related to career development and planning offices). Journals, newsletters, and membership lists of professional organizations such as the Cooperative Education Association may offer further leads.

The Roles of Instructor Coordinators and On-Site Supervisors

Supporting students in work-experience programs requires coordinators to perform several roles: Knowledgeable observer, facilitator, resource person, adviser, and evaluator. According to Permaul (1981), these roles are intended to ensure that everything is proceeding according to learning plans, that unanticipated events are dealt with constructively, and that any needed adjustments are made in a timely manner. To ensure the success of work experiences for students, Permaul suggests that personnel certify that students:

1. Are using experiences effectively to learn, which calls for an understanding and application of experiential learning skills.
2. Are progressing in the right direction as dictated by learning goals and objectives, which require ongoing documentation of learning that is "measurable."
3. Are getting timely feedback on their performances in order to make needed adjustments in both behavior and nature of placements.
4. Are guided to additional and supplementary resources which enable them to better understand assignments and function more effectively in completing them.
5. Document worksite learning in order to have data for the final product and for final evaluation.

Pataniczek and Johansen (1983) suggested that instructor coordinators should observe students and assist in the process of integrating connections between classroom and field experiences. Further, worksite supervisors should play equally important training roles and capitalize on situations that can

result in significant learning experiences as well as offer positive feedback and support to students. It is also helpful if the cultures of organizations allow for experimentation and mistakes to support learning of interns.

Integral to the success of work experiences, however, is the collaboration between worksite supervisors and teacher coordinators. To take full advantage of opportunities for experiential learning, cooperative arrangements to monitor and support students' work experiences are vital.

Opportunities for Reflection

As noted earlier, an important aspect of ensuring that learning actually occurs from work experiences is the opportunity for students to reflect upon and personalize their own experience. Kolb and Lewis (1986) suggested that encouraging reflection on the meaning of abstract concepts in the light of shared personal experiences allows concepts to become "real," that is, learners find examples and applications in their experiences that illustrate concepts. By closing the gaps between experiences and concepts, individuals discover how to learn from their own experiences and how to better shape their own development.

Without reflection, learning from direct experience should not be assumed. Therefore, designing a support system to assist students in learning from their experiences should be provided by the school. Common means by which learners are given opportunities to reflect upon their experiences are control classes, individual journals, and individual sessions with coordinators or training sponsors.

Control classes, or seminars, are specific times set aside for students who are participating in a work experience to meet for related instruction and development activities. These classes provide a forum for students to share and learn from each other's experiences through discussion and group activities.

Journals are a collection of notes on observations, reflective thoughts, questions, and feelings about the learning experience. "Critical incident" journals differ somewhat from the more informal daily log of activities. Stanton and Ali (1987) described the concept as (a) preset objectives stipulated by the coordinator or training sponsor as criteria for determining what incidents from the work experience to select for recording and analysis, (b) an opportunity to reflect upon incidents chosen by the student according to the change they produce, (c) an opportunity to reflect on incidents which are not necessarily treated in normal time sequence, and (d) an opportunity to record and analyze selected incidents which assist in measuring progress toward learning objectives.

Individual sessions with the coordinator or training sponsor allow an opportunity for discussion involving the status of the learning experience. Ward and Wolfson (1990) suggested a process for planning sessions with learners: (a) review achievement of overall goals (questioning should be

open-ended allowing the learner to express thoughts and feelings), (b) identify factors that contributed to goal attainment as well as the barriers, (c) discuss ways in which various situations could have been dealt with differently, (d) discover other goals or activities that may become a part of the learning plan, (e) reinforce attained goals, and (f) provide confidence for the achievement of further goals. The literature, at this point, does not suggest which of these is the most appropriate method for reflection, although a combination of control classes, journals, and individual sessions may be the most effective.

Joplin (1981) suggested a five-step model that provided structure to learning programs based on reflection:

1. Focus--presents tasks and provides orientation of students to what is expected of them.
2. Action--places learners in stressful situations in which they are unable to avoid problems presented; action may be physical, mental, emotional, or spiritual.
3. Support--enables students to persevere and overcome difficult or frustrating situations. Reflection in action is emphasized, as is an understanding and conscious application of experiential learning cycles by students.
4. Feedback--provides information to students on how well they are progressing in their learning.
5. Debrief--sorts and orders information via group discussion, written projects, and oral presentations.

A Synthesized Approach to Structuring Work-Based Experiential Education

Following the basic elements of Kolb's Experiential Learning Model (1984) and Glassberg's (1977) Action Reflection Model (which depicts elements in a curriculum designed for a student teaching seminar which allows students an opportunity to reflect upon and integrate their field experience), a systematic method of structuring work experience is proposed (see Figure 3). The combined model incorporates the four stages of experiential learning--job experience, structured reflection, feedback analysis, and evolving training plan--and the components found in a traditional work-experience program.

I. Job Experience

The job experience should provide a match between students and situations that will challenge them at appropriate levels. In addition, the work students are required to perform should be structured to assimilate individuals' learning needs and career interests. The assigned tasks should allow a layering of increasingly differentiated perceptions and abilities of students, as well as provide opportunities for physical/psychomotor, cognitive, and relational/affective skill development. All this should be specified in learning plans.

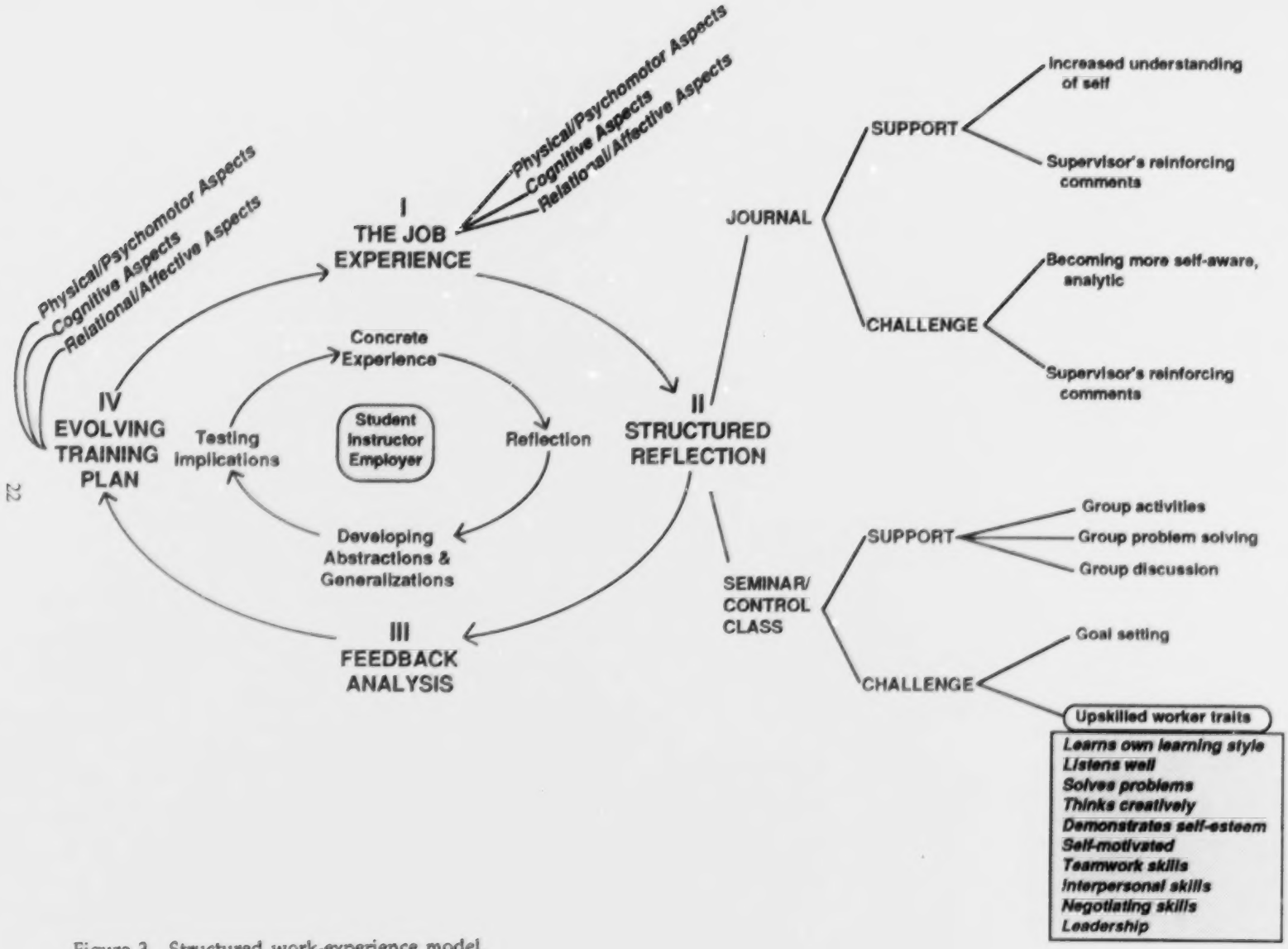

Figure 3. Structured work-experience model.

II. Structured Reflection

As students strive to make sense of experiences, structured reflection allows for the transformation of those experiences into learning. To enable this transformation, students should be encouraged to challenge what they are experiencing: What they see, what they do, and how they feel. The ideal situation for student reflection combines both individual (journal) activities and group (control class/seminar) activities during which instructors and peers both challenge and support learning. Also, by utilizing structured activities (i.e., papers, presentations), students are able to synthesize and present the new knowledge gained through their experiences.

III. Feedback Analysis

Feedback analysis is the stage in the process where the progress of the student is compared, analyzed, and resolved in accordance with training plans. Students also are given opportunities to develop abstractions related to their work experiences and develop hypotheses regarding needed changes in behaviors.

IV. Evolving Training Plan

Based upon feedback analysis, training (learning) plans are adjusted to incorporate developed hypotheses. At this point, students may be given additional responsibilities, further training, and/or remediation in any or all of the three job experience aspects: Physical/psychomotor, cognitive, and relational/affective.

CHAPTER 3

ALTERNATIVE WORK-EXPERIENCE MODELS

One way to examine alternative work-experience models is to employ the paradigm of evaluation. Traditionally, educational evaluation has included three foci: Inputs, transformation, and outputs (outcomes). These transcend the notions of summative and formative evaluation.

Finch and Crunkilton (1984) wrote that input evaluation placed its focus on resource and strategy decision-making by systematically identifying and assessing the relevant capabilities of all program components. Information based on this identification and assessment would be used to select specific resources and strategies to meet stated objectives.

Transformation can be most closely paralleled with instruction and can be used to examine a variety of areas such as whether certain aspects of the program are operating properly, what level of quality is reflected in the program and its personnel, whether forms are properly utilized, and other structural aspects of the program. Finch and Crunkilton suggested that outputs center on the valuative components of student and program benefits as well as the business outcome of economic development.

Such evaluation data are usually derived from instruments which gather data from program participants, training plans, student evaluation reports, student weekly reports, and follow-up studies approximately six months after graduation. Wanat and Snell (1980) suggested that program evaluations have several components (see Table 1.)

Cooperative education, internship, apprenticeship, and simulation are the most common forms of school-supervised, work-experience models. These will be discussed in this chapter, particularly as they relate to postsecondary vocational-technical education. Although common characteristics exist between these models, each is a unique application of experiential learning. Their differences are more evident when each model is described in the context of evaluation foci: Input, transformation, and output.

Cooperative Education

Cooperative education has been a part of American education since the turn of the century. It has a "long and proud history as a method of instruction that links the school's classrooms to the community classrooms in the shops, stores, offices, factories, and service agencies" (Wanat and Snell, 1980, p. v).

Table 1

Summary of the Components of Work-Experience Evaluation

Evaluation foci	Components
Input	Type of student in program
	Type of institution offering program
	Objectives of the program
	Resources allocated
	Role of supervising instructor
	Role of business
Transformation	Intensity and duration of experience
	Relatedness of instruction
	Level of school-based intervention
	Structural aspects of program
	*Level of needs assessment
	*Use of training plans, agreements
	*Nature of school contact with employers
	Quality of work experience
	*Quality of supervision
	*Quality of on-the-job training
Output	Student outcome evaluation
	Program outcome evaluation
	Business outcome/economic development

It can be defined as the integration of classroom theory with practical work experience under which students have specific periods of attendance and employment. A more formal definition was provided in the 1984 Carl D. Perkins Vocational Education Act (Public Law 98-524) (cited in Mason et al., 1989).

The term "cooperative education" means a method of instruction of vocational education for individuals who, through written cooperative arrangements between the school and employers, receive instruction by including required academic courses and related vocational instruction alternation of study in school with a job in any occupational field. The two experiences must be planned and supervised by the school and employers so that each contributes to the student's education and to his or her employability.

Input

Cooperative education programs are pervasive at all levels of educational systems. Over 1,000 programs have been instituted at postsecondary levels; 46% of the programs are in community or two-year colleges, and 54% of the programs are in four-year colleges and universities (Hartley, 1983). In 1986, approximately 205,000 students were enrolled in cooperative education programs at the postsecondary level (Heinemann & Heller, 1987).

The intent of cooperative education is to provide students with opportunities to alternate academic studies with relevant work experiences, allowing them to apply what they have learned in the classroom to the job. Mason et al. (1989) added that the key difference between cooperative education and other work-experience programs was that cooperative education plans have, as their central purpose, the development of occupational competence, using employment in real jobs as a source of learning. Davies and Carr (1984) contended that, unlike a number of state-supported work-study programs which aim to place students in jobs related to students' education or career interests, cooperative education placed students in jobs specifically designed as an integral part of curricula. They further stated that academic standards ought to determine student participation in cooperative education and academic credits may or may not be included as part of the total degree credits required for graduation. However, van der Vorm and Jones (1985) reported that the majority of cooperative education programs in this country (over 90%) were awarding some form of credit and, in most cases (70% of reporting institutions), it was cumulative credit applied directly to the academic degree program in which the student was enrolled.

Meyer, Crawford, and Klaurens (1975) cited Congress' description of the objectives of cooperative education as meaningful work experiences combined with formal education which will enable students to acquire knowledge, skills, and appropriate attitudes. Such programs remove the

artificial barriers which separate work and education, and, by involving educators with employers, create interaction whereby the needs and problems of both are made known.

Employers also have their own reasons for participating in cooperative education programs. Korngold and Dube (1982) cited the following: To (a) obtain productive workers; (b) attract top-quality candidates; (c) recruit long-term employees; (d) create a cost-efficient labor force; and (e) meet cyclical, project, or short-term work needs.

Federal funding resources have supported the expansion of cooperative education since early in this century. The Higher Education Act has provided approximately 80 million dollars to strengthen and expand cooperative education (Ad Hoc Committee on Cooperative Education, 1986). In addition, Title III of the Higher Education Act has provided funding for primarily African-American institutions, and Title I monies are available to community colleges. Overall, a total of 130 million dollars has been contributed from a variety of sources--state and industry--in support of cooperative education at the secondary level.

The success of cooperative education programs depends in final measure not upon financial resources, but upon the competence of the personnel involved (Mason, Haines, & Furtado, 1981). Typically, key personnel for programs would include school-based teacher coordinators and industry-based supervisors. Mason et al. identified specific responsibilities of cooperative education program coordinators: (a) select and develop training stations, (b) guide and select students, (c) place students in quality jobsites, (d) assist students in adjusting to their work environments, (e) improve training on jobs, and (f) correlate classroom instruction with on-the-job training. The employer's role is to assist schools by providing planned occupational experiences and on-the-job instruction. Work environments should be structured to allow opportunities for students to move from one specific job activity to another in order to gain various useful experiences relating to their occupational goals.

Transformation

The structure of cooperative educational programs can be divided into two systems: (a) cooperative vocational education, and (b) cooperative academic education. Heerman (1975) identified these two systems as "vocational education model" and "general education model" and compared their characteristics (see Table 2). The implementation of cooperative educational programs can also be divided into two models (Hartley, 1983; Ryder & Wilson, 1987):

1. Parallel operation--students work part of the day or week and attend classes during nonworking hours.
2. Alternating operation--students interweave periods of full-time study with periods of full-time employment. The length of each segment varies by institution, but it is usually controlled by such variables as academic calendars and the use of summers for work or study.

Table 2

Characteristics of Two Cooperative Education Models

Characteristic	*Vocational Education Model*	*General Education Model*
Institutional Practice	Many high school programs operate under this formula as do some community colleges and most technical institutes.	Numerous colleges (two- and four-year) and universities (including preprofessional, professional, and graduate programs) operate under this formula.
Program Objective	To foster technical and conceptual skill development in an area of occupational specialization in order to prepare students to accept positions of responsibility in the world of work.	To stimulate the student's intellectual career and personal development in response to a wide range of student needs.
Coordinator Function	To coordinate job training in the area of the student's career objective with correlated classroom studies designed to foster vocational skill development.	To provide a variety of work experiences in response to student's educational needs (personal, career, or intellectual).
Organizational Placement	Coordination is decentralized by combining the function of coordinator and vocational instructor in high schools and some two-year college programs, but a centralized staff department frequently provides for the co-op service in two-year collegiate programs.	A centralized department provides co-op services in most four-year and many two-year colleges--occasionally with liaison or part-time participation of faculty.
Federal Funding	Matching state and federal monies created through vocational education legislation (i.e., non-baccalaureate programs).	Funded through the Higher Education Act.
Work-Study Sequence	Students typically alternate study and work periods on a half-day or term (quarter or semester) basis.	Students typically alternate work and study each quarter or semester in these programs but may carry study and work schedules concurrently with reduced work and study loads.

Note: From Cooperative education in community colleges: A sourcebook for occupational and general educators (p. 10) by B. Heerman, 1975, San Francisco: Jossey-Bass. Copyright 1973 by Jossey-Bass. Reproduced with permission of the publisher. All rights reserved.

Ideally, each work placement offers progressively higher levels of responsibility as student employees demonstrate the readiness to handle them. Parallel operations are most frequently used at the secondary level and in some postsecondary vocational education programs. Alternating operations are more often used in postsecondary programs but may be found in a few secondary programs.

Hartley (1983) has identified four characteristics of successful cooperative educational programs:

1. Work experiences that are productive in nature and are essential components of the overall educative process.
2. Work assignments that relate to students' field of study and/or career interests.
3. More than one period of supervised, paid employment of sufficient duration to enable students to have in-depth learning experiences and to represent a cost-effective investment for employers.
4. A minimum standard of performance and means of assessment so that the educational institution may accredit or certify the experience.

Mulcahy (1984) used an empirical approach to examine cooperative education and to determine whether an actual cooperative education program incorporated the principles articulated by those philosophers and theorists whose writings constitute the intellectual foundation for experiential learning. The study focused on the perceptions of students participating in the program; these perceptions contribute most to an understanding of the experiential learning process. Mulcahy found that, although two-thirds of the sample stated they obtained little from the program beyond the academic credit, they listed as benefits (a) the development of a sense of responsibility, (b) clarification of goals, (c) an increase in self-confidence, (d) the acquisition of useful technical skills, and (e) some awareness of overall business operations. Nevertheless, Mulcahy found that the program appeared to have been planned without taking into consideration the fundamental principles of experiential learning theory. He suggested that more research was needed on the conditions that facilitate learning in such programs, and on the barriers that inhibit learning.

Outputs

Stadt and Gooch (1977) and Wanat and Snell (1980) detailed contributions of cooperative education to students, communities, employers, and schools. Student benefits included (a) learning from skilled professionals; (b) access to fieldsites utilizing up-to-date equipment and methods; (c) increases in potential placement rates, advancement, and remuneration; (d) development of cognitive and attitudinal skills critical to successful job performance; (e) sensitization to interpersonal relationships; and (f) aid in adjusting to work and achieving higher-level needs. Benefits to the community included (a) a pool of college-educated workers; (b) students' enhanced sense of citizenship and responsibility, and (c) an increased likelihood that students will remain in their communities. Employer benefits consisted of (a) carefully screened trainees, (b) training programs

with curricula geared to their employment areas, and (c) a highly motivated source of temporary or seasonal part-time employees. The benefits to cooperating schools included (a) outside facilities that cannot easily be duplicated on campus, (b) interactions with college or school communities, (c) improved student retention, and (d) immediate feedback regarding program successes.

Worthington (1985) found three significant outcomes associated with cooperative office education:

1. When compared to beginning jobs for non-cooperative office-education graduates, cooperative office education graduates received higher ratings from their job supervisors in every area of job performance measured.
2. Work experience appeared to affect a significant positive change in the attitude of students toward office occupations.
3. Students' perceptions of office work differed significantly after participation in cooperative office education programs.

Foster, Franz, and Waller (1986) used a causal-comparative method to study the extent to which cooperative education experiences contribute to individuals' satisfaction with their jobs, and their tendency to remain in those jobs, instead of seeking relocation. Two groups were selected for the study: Graduates of Central Missouri State University who had participated in the co-op program, and graduates of the same school who had not participated in the co-op program. The findings indicated that those who participated in co-op experiences were more satisfied at work regardless of whether or not a change in location of the work occurred. Individuals without cooperative experiences were only satisfied with their jobs if they were also satisfied with their geographic locations. Cooperative experiences seemed to provide maturing elements affecting job location factors and their significance in determining job satisfaction. For those students, location did not play a significant role in their job satisfaction.

Korngold and Dube (1982) also surveyed students to determine how they perceived the significance of cooperative education experiences in higher education. The survey found that these experiences were beneficial in the following order of significance: The experience helped participants (a) plan career goals, (b) gain better understanding of their course work, and (c) make professional contacts for jobs after graduation.

Kingston (1978) reported the following as benefits to employers who participated in cooperative education programs: Employers were provided with the workers they needed and access to students with special interests and abilities, and they reduced their cost of recruiting and training. Kingston listed the following as benefits to students: They were provided with the opportunity to work with people of all ages and become more self-confident, and they were introduced to local employment opportunities and became candidates for full-time positions.

In terms of overall benefits of cooperative education, Kingston felt that such programs bridged the gap between school and work for students, schools, and employers. These programs also assisted in establishing stronger public relations programs between schools and communities, as well as the development of relevant business programs.

Internship

According to Hartley (1983), an internship is a one-time, short-term placement, directly related to participants' academic professional goals, which is institutionally structured and monitored. Internships typically occur toward the end of participants' academic/professional training. Students are usually not paid, or are offered only small stipends. Typically, students' participation is project-oriented and observatory in nature, with little on-going connection to their schools or teachers during their internships.

With reductions in student loans accompanying increasing education costs, greater demands have been placed upon colleges and universities to prepare students for the workplace. In his 1980 book, On Higher Education (cited by Hanson, 1984), David Riesman discussed the need for alternative programs which make colleges adaptable to contemporary needs, and suggested the option of creating programs which give credit for off-campus involvement. Even the popular media have recently suggested internships as a way for students to gain practical, first-hand knowledge about certain fields, while gaining a competitive edge over other graduates (Hanson, 1984).

Input

Internship can be regarded as another model which is frequently used to facilitate learning about work (Hartley, 1983). Internships, using worksites for learning, have been widely used in higher education systems such as medical schools, law schools, seminaries, business schools, and teacher education programs (Silvernail & Costello, 1983). More recently, internships have been used in community college and university staff development programs (Caswell, 1983).

Almost 40% of the 1,998 programs of postsecondary technical and vocational education in Texas offered worksite components as part of their training. Educational practices varied widely among individual programs, and there was little communication or agreement on descriptive terms used by the practitioners associated with different programs (Glover & Shelton, 1987). In about one-half of these programs, all students were paid wages. Worksite training or internships were widespread across all occupational categories. Also, there seemed to be little agreement concerning the terms used to describe the various programs; "internship," "practicum," and "cooperative education" were used interchangeably.

Transformation

Conrad and Hedin (1981) reported that length and, to a lesser degree, intensity of work experience were consistently related to positive student change. Experiences lasting a full semester (18 weeks) were relatively stronger than shorter experiences, as were those in which students were in field placements 2 or more hours, 4 to 5 days per week.

The factors which contributed most strongly to pre/post gains were a mixture of features describing a combination of autonomy and collegial relationships with working adults. Adequate training and supervision by industry personnel were imperative if good learning experiences were to be realized.

Conrad and Hedin (1981) further stated that project coordinators also needed to recognize the importance of coordinating classwork with on-the-job training. On-site visitation to training locations at least once during the internship is vital. The process of implementing internships typically includes the following steps (Hartley, 1983):

1. Preplacement conferences involving students, employers, and faculty sponsors or supervisors.
2. The identification of specific, measurable learning objectives and the establishment of learning contracts.
3. The assignment of relevant scholarly projects which may be of immediate benefit to students' educational goals and/or of practical value to employers.
4. Periodic site visits by faculty sponsors or supervisors.
5. Regular or periodic campus-based seminars in which students discuss problems and progress and faculty reinforce the application of subject matter in the work-learn setting.
6. Written logs which document students' activities, achievements, and impressions.
7. Terminal reports and evaluations which may include student self-assessments, as well as assessments by faculty and hosts.
8. Postplacement conferences which may include student self-review of their experiences and the opportunity to re-evaluate students' course and career-related decisions.

Output

Very few studies have evaluated internship programs at the postsecondary vocational education level. Although there is limited information available regarding the contributions of internships to students, the results of two studies suggest certain strengths (Hanson, 1984; Kurtz, 1983):

1. Internships give students an opportunity to apply theory learned in a classroom to actual work situations.
2. Students who participate in internship programs have firsthand, interpersonal experiences with other employees, superiors, subordinates, and older and younger co-workers.
3. Through internships, students also have the opportunity to develop positive work habits and attitudes about jobs and an opportunity to test aptitudes for selected fields.

Most studies regarding internships have focused on the issues of program development in a specific field (Hyre & Owens, 1984; Kurtz, 1983). In a study of internships at a vocational school in Morrilton, Arkansas, Parks and Summers (1984) found that:

1. Internships provided training that was not cost effective for the schools to provide. They suggested an internship length of one quarter to approximately 10 weeks.
2. Approval and adoption of an internship location should be based on mutual agreement among employers, schools, coordinators, and interns.
3. Students' needs and interests were important considerations in determining the suitability of internship placements.
4. It was the responsibility of industry personnel to provide adequate training and supervision and to make certain students were engaged in work which would provide good learning experiences.
5. It was essential to coordinate classwork with on-the-job training. Project coordinators should plan on visiting each training location at least once during internship terms and, in some cases, more often.
6. Evaluation of any program was necessary to determine the extent to which objectives were being met.
7. It may be necessary to make changes as programs progress. Problem situations were often the result of miscommunication or a lack of communication.
8. Approximately 84% of the participating interns indicated that the program was very beneficial, while other participants felt they derived some benefit from the internship program.
9. Internship programs should be recommended as an integral part of the curriculum at postsecondary schools.

Apprenticeship

The historical definition of an apprentice (Rajan, 1966) is that of an individual bound by indentures or by legal agreement to serve another person for a certain period of time for the purpose of learning an art or a trade in consideration for instruction and usually maintenance by the master. Hence, an apprentice is one who is *learning* (emphasis supplied) by practical experience, under skilled workers and often without pay, an art, trade, or calling. Today, however, apprenticeships in the United States involve a government credentialing system for developing and recognizing specific skills, competencies, and accomplishments, and are handled in a manner similar to that of postsecondary schools and colleges.

The development of apprenticeships in the United States is closely related with the movement of labor unions and skill training. Apprenticeships in early colonial America resembled that of the United Kingdom. They were used as measures of poor relief, methods of education, penalties for idleness, or punishment for debt. They were also used to educate the poor who could not afford better educations (Rajan, 1966).

With the industrial revolution, apprenticeships were without protection. Children were used as cheap labor under the guise of apprenticeships. These unsatisfactory conditions forced labor unions to undertake long and continuous struggles to bring about some regulation of apprenticeship, beginning around the middle of the nineteenth century. Eventually the federal government passed laws to protect apprentices from abuse and to establish acceptable working conditions for them (Grabowski, 1983).

Input

Apprentices are those who are taught a trade; in short, they are learners, not workers. Yet, since apprenticeships are based on practical experience under skilled workers, they also denote periods of employment which form the basis for "practical training." During this time, apprentices receive compensation for their services partly in the form of wages and partly through instruction in the particular trade, craft, or business one is studying (Rajan, 1966).

Traditionally, apprenticeships represent a process for learning skills while directly working with employers. Most of the construction industry has promoted apprenticeships for skill training programs for many years. Currently, several other occupations also have adopted apprenticeships as their method of job training--computer programmers, repairers, etc. The majority of apprenticeships are provided by private, voluntary training programs which are under the supervision of the government credentialing system.

As a training system, apprenticeships are used to train computer programmers and carpenters, paramedics and plumbers, nuclear technicians and electricians. As a concept, it is typically "learning by doing." The result is acknowledged competence in an occupation with readily marketable skills that can yield lifelong satisfaction and income (Grabowski, 1983).

On the federal level, the National Apprenticeship Act, the Federal Wage and Hour Law, and construction legislation established legal parameters for the conduct of apprenticeship programs. In addition, 33 states and territories have adopted laws and regulations governing the registration of programs and participants. Federal regulations give states with approved laws full authority to act in behalf of the federal government (Grabowski, 1983).

Transformation

Today's apprentice can be accredited for recognized specific skills by a government credentialing system. An individual's enrollment in a specific registered apprenticeship program is documented; the apprentice's day-to-day progress toward learning all facets of the target occupation is recorded and matched against the approved, written training outlines which describe what functions should be learned, for how long, and where. Apprentices who complete all phases of the prescribed training earn a certification of completion (Grabowski, 1983).

Rajan (1966) described the main differences between apprenticeships, cooperative education programs, and internships. The processes of learning by doing from internship and cooperative education are based on "theoretical implementation" (applying theory into practical uses), while the process of learning by doing from apprenticeships is based on "practical implementation" (learning practical uses directly from employment).

There also is a difference between on-the-job training and apprenticeship. Individuals receiving on-the-job training are regarded as workers, while apprentices, it should be emphasized again, are regarded as learners.

Output

Previous research regarding apprenticeships has focused on program development and the relationships among apprenticeship, labor unions, and vocational education programs (Westbrook & Butler, 1981). For example, Worthington (1984) emphasized the importance of improving apprenticeships to fit into the economic and technological changes of the future and the role of vocational education. He stressed that completion of apprenticeships should be competency-based, rather than based on the time period of participation in programs. If providers of apprenticeship training programs are to be able to follow this recommendation and to affect other changes in the structure of apprenticeships that have become necessary as a result of recent technological, demographic, and economic changes, then strong collaborative partnership training should be maintained between vocational education programs and the private sector.

The William T. Grant Foundation Report (1988) advocated apprenticeship programs and argued that the merits of a significant expansion of this system in the United States had long been overlooked. The report called for the federal government, major businesses, and organized labor to jointly explore the development of modern and more responsive American approaches to training through apprenticeship.

> As they explore this possibility, they should bear in mind that apprenticeships need not be regarded as "terminal training" or lower status than academic education. Rather, quality apprenticeships offer an alternative route, a hands-on education, that students can use to gain good employment as well as continue their postsecondary education. (p. 101)

Hamilton (1990) argued that there needed to be a system, not programs, of apprenticeship. Following the German model, he suggested that four essential elements are necessary: (a) exploiting workplaces and other community settings as learning environments, (b) linking work experience to academic learning, (c) giving apprentices constructive roles as workers and learners simultaneously, and (d) fostering close relations between all ages of workers. Beyond this, he argued that apprenticeships directed toward specific occupational training should be required to have contracts,

earnings, carefully planned progressions of training and responsibility, breadth and depth of training, and reasonable prospects for future employment.

Simulation

Simulations of work experience are designed to comprise a more or less accurate representation or model of some external reality. Players interact in much the same way they would interact with actual reality (Horn & Cleaves, 1980). Parry (1980) stated that simulation techniques created a living case study in which participants applied their new knowledge and skills and obtained immediate feedback on appropriateness of behavior.

Input

Many fields, such as health education, business schools, and military academies, use simulation as experiential learning strategies. In education and training, simulation has been successfully used in teacher training, career development, and for student learning from elementary schools to colleges (Horn & Cleaves, 1980). However, few occupational simulation models have been developed specifically for postsecondary vocational education.

There is little in the literature regarding inputs into simulations. However, Miller (1985) emphasized the application of experiential learning and the use of adults (other than classroom teachers) in classrooms as two important strategies in simulation experiences.

Transformation

The structure of simulation learning is based on the theory of constant change in different circumstances (Cryer, 1986). Although the development of simulation programs varies according to in-class situations, basic characteristics of program structures can still be generalized by activities that allow flexibility in learning situations (Waddell, 1983). Nadler (1988) defined several of those activities:

1. **Case study**: An oral or written account of an event, incident, or situation used to develop critical thinking skills and to gain new perceptions into concepts and issues.
2. **Computer Assisted Instruction (CAI)**: A highly structured and self-paced series of learning segments presented by computer that also process response information and provide immediate feedback.
3. **Role playing**: An interaction between two or more individuals on a given topic or situation that assists participants in identifying problems of social interaction.
4. **In-basket practices**: A simulated, reinforced exercise in which learners respond to a collection of memos, directives, and problems that force them to prioritize, make decisions, and handle the difficulties that might be found on jobs.

Output

Hoover (1980) identified seven benefits that flow from simulated experiences:

1. Feedback is immediate.
2. Discussion is more realistic and reflects observed behavior.
3. Learners may more likely become receptive to new ideas, and attitude change is more likely with personal involvement.
4. Opportunities exist for discovery.
5. Opportunities exist for learners to apply prior learning.
6. Learners adapt more global views of the situation because the perceptions of others are made evident.
7. Simulations created by adult educators are inexpensive, tend to have greater relevance, and are relatively easy to develop when they reflect real experiences of adult students.

The contributions of simulations discussed thus far have focused on the benefits of educational and mental developments of students. However, simulations can be used to help develop students' critical attitudes and increase human potential. According to Rockler (1979), creative behavior (e.g., divergent thinking, flexibility, fluency, openness, development of new points of view) was facilitated through the use of simulated experiences.

Waddell (1983) introduced simulation as an experimental approach to adult education. He argued that simulation provided a good learning environment for adult learners. In particular, the availability of immediate feedback and responses afforded in simulation is especially effective in the training of adults. Consequences of performance can be identified and the discussion which follows simulations can provide for sharing of the feelings and perceptions of others.

Improving School-Supervised Work Experience

Each of the four models of school-supervised work experience reviewed in this publication appear to have merit. Each, however, could be improved by the application of experiential learning theory to practice. The structured work-experience model proposed in this publication provides a model for integrating traditional components of school-supervised work experience with experiential learning theory. The proposed model is expected to work equally well with internships, cooperative education, apprenticeships, or simulations and has the potential for improving the practice of each.

What follows are general recommendations designed to improve the practice of school-supervised work experience. These recommendations are consistent with the structured work-experience model advanced by the authors. They are presented using the categories for structuring work experience discussed in Chapter 2.

The Learning Plan

The success of most endeavors depends on the initial planning undertaken to establish a strategy, and the resources needed to accomplish stated goals. The learning plan offers such a method to assist in identifying the direction of the students' overall learning experience. The literature suggests the following as key components of a learning plan:

1. Students should be extensively involved in the formulation of objectives. The objectives should identify broad educational and occupational goals or competencies, and meet the individual's expressed needs in addition to those identified with the program.
2. Job tasks included in the plan should promote the development of cognitive, affective/relational, and physical/psychomotor skills or attitudes.
3. The plan should identify the most appropriate method(s) of instruction for each objective and who is responsible for delivery of instruction (school or industry personnel).
4. There should be assurance that the student will have the opportunity to rotate through various tasks requiring differing skills and increasing levels of competency, providing constant challenge for the student.
5. All relevant activities and responsibilities of learners, coordinators, and supervisors should be delineated.

Time Required

Time, as a resource element in the work experience, needs to be structured and delineated to take full advantage of work-learning opportunities. The agreed upon schedule should, above all, be conducive to students' learning needs. The following are elements to be considered when considering the "time" resource:

1. Sufficient duration and intensity should be allowed to permit the development of the competencies identified in the plan.
2. Tentative timeframes for scheduled activities should be agreed upon.
3. The combined hours of work and school should not exceed forty hours per week.

Supervision

Determining who is responsible for certain activities is another resource element that is vital to the success of the work experience. Supervision includes monitoring and supporting students' progress toward goals. Elements to be considered are:

1. Coordinators, students, and worksite supervisors should agree upon supervision components that support learning.
2. Monitoring of learning should be scheduled at least every 2 weeks for a minimum period of 30 minutes. These visits should be staggered to facilitate observation of the student in all facets of work experience.

Student Evaluation

Students, coordinators, and worksite supervisors should regularly assess how well students are progressing toward established goals. An important component of this process is the modification of goals to correct or enhance student learning. This assessment may include:

1. Job-skill rating instruments
2. Observations
3. Self-assessments
4. Control class activities
5. Progress reports related to the learning plan

Preplacement Planning

Preplacement planning assists in assuring that a proper match is made between the student and the worksite. The student is given an opportunity to learn "how to learn" and to apply classroom skills and knowledge at the worksite. The employer is provided with information and guidance necessary to assist in the development of an appropriate learning experience for the student. Activities that should be incorporated into preplacement planning are:

1. Prior to placing students in a work situation, criteria specifying appropriate conditions necessary for the personal and occupational development of students should be established.
2. Work supervisors should be oriented to their responsibilities in the education of the students.
3. Students should be oriented to their responsibilities as employees.
4. Students should be oriented to the process of experiential learning and to their responsibility for their own learning.

Role of the Coordinator

The school supervisor is primarily responsible for the overall coordination of the student's work experience. Proper coordination involves maintaining a "cooperative" venture between the school, the employer, and the student. In addition, the school supervisor has the responsibility to:

1. Ensure that learning is occurring and that student and program goals are being met.
2. Provide appropriate and timely feedback to students and employers.
3. Conduct the control class in a manner that allows for student reflection and integration of the work experience into the educational program.

Role of the Worksite Supervisor

The worksite supervisor has, perhaps, the central role in the work experience of the student. The extent of the support and guidance provided by the supervisor could determine the overall success of the experience for the student. The worksite supervisor is responsible primarily to:

1. Provide a safe and educational work environment for the student.
2. Furnish appropriate and timely feedback to the student and the school supervisor.

Control Class and Other "Reflective" Experiences

A control class is the crucial component in the process of experiential learning. It provides for the integration of related coursework and worksite experiences as well as other activities that will enhance student learning. For students to internalize their experiences they need to be provided with opportunities for reflection. Although journalizing is one method of reflection, group activity provided in a control class is also vital to the learning process. The following are typical components of a control class:

1. There should be a regularly scheduled (weekly is preferred) opportunity for students to engage in structured reflection about their work and what they are learning.
2. A control class may operate in addition to other reflection opportunities such as the use of a work journal.
3. Individual and group activities should provide a challenge and support the continued personal and occupational development of students.

Program Evaluation

All affected parties should participate in the evaluation of the work-experience component of the program. This should include students, worksite supervisors, and coordinators. The evaluation process may also include administrators, community representatives, parents, and others.

Inputs, transformation processes, and outcomes should be evaluated. A partial listing of these components includes:

1. The appropriateness of program objectives
2. Identification and selection of students for participation
3. The effectiveness of the reflection components
4. The specific worksites used in the program
5. Student progress toward program goals
6. Work supervisor effectiveness

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

While there is some evidence that the use of cooperative education and internships is increasing in postsecondary schools and colleges (the evidence on apprenticeships and simulations is less clear), the basis for increased use is probably more a function of perceptions than empirical data. One of the assumptions about the use of real work experience is that it is a powerful motivator, particularly if the work experiences are positive, meaningful, and realistic. If school-supervised work experience can motivate students more effectively than traditional educational methods, then there should be some differential, measurable acquisition of the skills and attitudes desired by employers by participants in such programs. We could assume, for example, that participation in one of these strategies should be a factor in a successful transition into, or advancement within, their chosen occupation.

Studies of postsecondary work-experience programs in the United States have tended to emphasize program development and program introduction. While some have focused on the contribution of work-experience programs to the economic advantage of students, schools, and employers, few studies have explored the contribution of experientially based work programs to the social development, educational advancement, or psychological maturity of participants. Further, little research has specifically examined the link between participation in the many unique forms of work-based experiential learning and later success in the labor market.

Stanton (1983) argued that there was a need to examine more closely what interns, faculty, and field supervisors do to ensure that students learn and that host organizations are appropriately served. Although some research on work-based experiential learning has been undertaken, Wilson (1988) noted that most had focused on four-year colleges or secondary programs. Little attention has been given to postsecondary schools or colleges despite their continued growth in enrollment and their widespread use of such strategies.

In the studies reviewed, the most prevalent methodology was self-report surveys of participants. This offers little in the way of understanding the processes or the impact these experiential programs have had. Anderson (1984) argued persuasively to broaden the base of inquiry and study experiential education as part of the overall education concern. This suggests that, in addition to

students' personal and occupational development, the process of experiential learning needs further exploration.

Moore (1983) provided an example of this need. During extensive observations of student interns he found that the "reflection" component of the experiential model, so often claimed by experiential educators to be missing from the real work world, in fact, appeared more frequently than anticipated. It seems appropriate to further investigate the contribution of the reflection process in the acquisition of desirable outcomes. Other components of experiential education are similarly under-investigated in studies of work-based, experiential education: Intensity and duration of the experience, design and conduct of structured reflection (e.g., control classes, journals, individual contacts with instructors), and other forms of student support.

Recommendations for Future Research

This review of the literature supports the need to more closely examine the application of experiential, work-based learning to the occupational development of youth and adults. There is little question that such experience can contribute to the occupational and personal development of individuals. However, significant questions remain. The following is an illustrative but not exhaustive list of possible research directions suggested by this review of the literature:

1. Do the alternative models discussed in this publication provide similar benefits to students and employers?
2. Are there qualitative differences in the workplace that would affect the use of experiential learning?
3. Is an experiential, work-based model of vocational-technical education more responsive to individual student needs (e.g., student characteristics such as learning style) than more traditional educational methods?
4. Is an experiential, work-based model of vocational-technical education more efficient and effective in developing workers needed to meet existing labor market needs?
5. How effective is experiential, work-based learning in developing the upskilled worker and in preparing people to cope with a changing work environment?

There is little doubt that providing positive, realistic work experience benefits participants. It is also very likely that participating firms also benefit. However, we have little empirical data on how best to structure such experiences. Answers to the questions posed here will help educational institutions make better use of the work world as a place for learning.

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